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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/560,629	12/12/2005	Takuma Yano	13006.116	7151
7590 Fildes & Outland Suite 2 20916 Mack Avenue Grosse Pointe Woods, MI 48236			EXAMINER TOSCANO, ALICIA	
			ART UNIT 1712	PAPER NUMBER
			MAIL DATE 09/24/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/560,629	Applicant(s) YANO ET AL.	
	Examiner Alicia M. Toscano	Art Unit 1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 August 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Examiner mistakenly asked for Applicant's to perfect priority to overcome prior art, however, the rejections set forth previously and below do not have a publication date which can be overcome by submission of an English translation.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

1. Claims 1-5 and 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda (JP 2003-147182- English translation included) in view of Matsumoto (JP 2002-030208-English translation included).

Ueda discloses biodegradable polyester resin compositions. Said composition comprises 0.01-10 pts mass of methacrylic esters, such as glycidyl methacrylate [0013], or a crosslinking agent, 0.01-10 pts mass peroxide and 0.05-30 pts mass layered silicate. The biodegradable polyester resin may be polylactic acid or a copolymer thereof [0008]. The composition is used for foams (abstract).

Ueda does not disclose end-capping the polyester resin. Matsumoto discloses polylactic acid resin compositions. The carboxylic acid end groups of said composition are blocked (abstract). The blocking agent may be an epoxy, an oxazoline and the like [0015]. Blocking the carboxylic endgroups results in a composition having higher heat

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resistance and hydrolysis resistance (abstract). Use of 0.72, 0.56 and 1.00 wt% of the blocking agent is disclosed in Examples 1, 3 and 4 respectively.

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Ueda the technique of blocking the polylactic resin with epoxy, oxazoline and the like, as taught by Matsumoto, in order to increase the heat and hydrolysis resistance of the resin, thusly meeting all the requirements of Claims 1-5 and 7-11.

Remarks:

Applicant argues Comparative Example 3 and Comparative Example 1 of Table 1 show unexpected results of blending the composition of Ueda (Comp Ex 3) with the composition of Matsumoto (Comp Ex 1). The Examiner agrees. The combination of the elements of Comp Ex 1 and Comp Ex 3 is disclosed in Ex 5, wherein Comp Ex 3 shows insufficient strength in measuring flexural breakdown and wherein Comp Ex 1 shows a range of flexural breakdown numbers, Ex 5 shows an improvement in the flexural breakdown numbers, with numbers higher than Comp Ex 1. The Examiner agrees that one would not expect said properties when all the elements are used together. Similar results are shown for isocyanate: Comp Ex 4 and Comp Ex 1 show the two individual compositions, wherein Ex 7 shows that a composition comprising all elements has unexpected improved flexural breakdown numbers.

The results are convincing for (1) the composition of a carbodiimide blocked polyester with methacrylate, peroxide and silicate and (2) a composition of a

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carbodiimide blocked polyester with an isocyanate and peroxide. Examiner suggests limiting the compositions to the above options. Alternatively the Examiner requests similar experimental results for epoxy, oxazoline blocking agents with the different crosslinking compounds.

2. Claims 1, 2, 3, 4 and 7-10 rejected under 35 U.S.C. 103(a) as being unpatentable over Kubo (JP 2000-017037- English translation included) in view of Matsumoto and in further view of Krishnan (US 5500465).

Kubo discloses expandable resin compositions. Said compositions comprise a D-L-lactic acid copolymer and 0.5-5 wt% of an isocyanate crosslinking agent (abstract). The composition is used for foamed articles [0007].

Kubo does not include the use of blocking agents for his composition. Matsumoto discloses polylactic acid resin compositions. The carboxylic acid end groups of said composition are blocked (abstract). The blocking agent may be an epoxy, an oxazoline and the like [0015]. Blocking the carboxylic endgroups results in a composition having higher heat resistance and hydrolysis resistance (abstract). Use of 0.72, 0.56 and 1.00 wt% blocking agent is disclosed in Examples 1, 3 and 4 respectively.

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Kubo the technique of blocking the polylactic resin with epoxy, oxazoline and the like, as taught by Matsumoto, in order to increase the heat and hydrolysis resistance of the resin.

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Kubo and Matsumoto do not disclose the use of a peroxide. Krishnan discloses biodegradable compositions. Said compositions comprise polyester resins such as polycaprolactone (abstract), polylactic acid and the like (column 6 lines 26-40). Said compositions may comprise 0.01 to 5 wt% peroxide initiator to crosslink the polyester and thusly improve melt strength (Column 5 lines 48-51 and Column 9 lines 25-39).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Kubo and Matsumoto the use of 0.01-5 wt% peroxide initiator, as taught by Krishnan, in order to improve the melt strength of the composition. All the requirements of claims 1-4 and 7-10 are thusly met.

Remarks:

Applicant's data is convincing for a composition of a carbodiimide blocked polyester with an isocyanate and peroxide only. Examiner suggests more data for the other blocking agents, as discussed above.

Applicant argues Kubo does not disclose the resin composition of Claim 1, nor does Matsumoto. Examiner disagrees. The combination of Kubo and Matsumoto meet the limitations of Claim 1, it is unclear to the Examiner what is not met since the polyester is a polylactic acid resin, disclosed in pg 4 para 3 in Applicant's specification to be a resin used in the composition and Matsumoto discloses blocking agents for said resin. The rejection thusly stands.

3. Claim 6 rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda and Matsumoto, or Kubo, Masumoto and Krishnan, in view of Miyamoto.

Ueda and Matsumoto or Kubo, Masumoto and Krishnan include elements of the invention as set forth above. Ueda and Matsumoto or Kubo, Masumoto and Krishnan do not include the mixing/reacting steps of the composition. Miyamoto includes elements as set forth above. Miyamoto discloses first endcapping the polyester and then mixing it with the crosslinking agent. End-capping the polyester prior to mixing it with the crosslinking agent minimizes cross-reactions between the blocking agent and the crosslinking agent and maximizes the amount of blocking on the polyester. Increasing the blocking conversion increases the heat and hydrolysis resistance and decreasing the cross-reactions increases the homogeneity of the final product.

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Ueda and Matsumoto or Kubo, Masumoto and Krishnan the step of blocking the polyester before mixing the composition with the crosslinking agent, as taught by Miyamoto, in order to increase the heat resistance, hydrolysis resistance and homogeneity of the composition.

Remarks:

Applicant argues Miyamoto does not disclose the method as claimed in claim 6, citing a previous argument. Applicant further argues the combination of inventors do not include the use of a peroxide.

The Examiner disagrees. The Examiner could not find clarification in the Remarks set forth by the Applicant as to what part of the method was not disclosed by Miyamoto. Thusly, the Examiner disagrees since the motivation and method are proper, as set forth above and previously. Regarding the combination, the newly required peroxide is rejected as set forth above.

4. Claims 5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubo, Masumoto and Krishnan in view of Kitazono.

Kubo, Masumoto and Krishnan include elements of the invention as discussed above. Kubo, Masumoto and Krishnan do not include the use of a layered silicate in the composition.

Kitazono discloses biodegradable polyester material blended with layered silicates (abstract). The biodegradable polyester may be polylactic acid [0008]. Inclusion of the layered silicate improves the gas barrier properties of the composition (abstract and [0005]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in Kubo, Masumoto and Krishnan the use of layered silicates, as taught by Kitazono, in order to improve the gas barrier properties of the composition, meeting the requirements of Claims 5 and 11.

Remarks:

Applicant continues the arguments made above with respect to Kubo and based on said arguments it is the Applicant's position that claim 1 is patentable and thusly 5 and 11 are patentable.

The Examiner disagrees. Kubo is proper for the reasons set forth above. Claim 1 is rejected over Kubo for the reasons set forth above. The rejection thusly stands.

Conclusion

Response to Arguments

5. Applicant's various arguments drawn to Miyamoto, Miyamoto and Kimura and Miyamoto and Kimura in view of Kitazono over claims 1-11 are moot since the newly amended claims overcome Miyamoto. The rejections have been withdrawn.

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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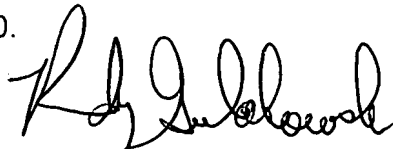
extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alicia M. Toscano whose telephone number is 571-272-2451. The examiner can normally be reached on Monday to Friday 8:30 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AMT


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